Teacher's Guide

Surviving Severe Weather in the United States

Overview

The purpose of this lesson is to provide students with a basic understanding of how to survive severe weather. This presentation will explain the impact of severe weather on our nation and what students can do to protect themselves from weather disasters. The lesson describes the Emergency Alert System (EAS) - our nations delivery system for weather and civil emergencies as well as homeland security.

Description of Slides

Slide 1. Weather is not always placid. Our country experiences a wide array of severe weather including; tornadoes, winter storms, hurricanes, droughts and heat waves.

Slide 2. The impact of weather on our nation is profound. Economically weather has a tremendous impact. The transportation, agricultural, and construction industries are significantly affected by weather.

Slide 3. America experiences more severe weather than any other country in the world. Most of this severe weather occurs in the Southeast United States.

Slide 4. The Southeast United States experiences so many severe storms because of it's geographic proximity to the Gulf of Mexico, the Rocky Mountains and the strong mid-latitude jet stream. The Gulf of Mexico supplies an abundance of low-altitude moisture, meanwhile, dry mid-altitude air travels east from the Rocky Mountains. When these two airmasses are accompanied by a strong jet stream, or river of fast flowing air from the west, the result can be severe thunderstorms which producing large hail, damaging winds, flooding rains, and tornadoes.

Slide 5. Advanced warnings and forecasts are critical to the protection of life and property. United States citizens fund (through Congress) a vast infrastructure of weather forecasting technology. This technology is administered by the National Weather Service.

Slide 6. Severe weather can strike in seconds. You must have a plan.

Slide 7. More people each year are killed by lightning or flash floods than tornadoes.

Slide 8. Because tornadoes strike so quickly receiving prompt warning and knowing how to protect yourself is very important.

Slide 9. Average Number of tornadoes across the United States.

Slide 10. This photo shows the importance of sheltering on the lowest floor of a building.

Slide 11. These numbers are casualties, which are both killed and injured by tornadoes each year.

Slide 12. This graph is for the United States. The peak season for tornadoes in the Mid-South is in March and April.

Slide 13. Tornadoes can occur in any month of the year across the Mid-South. This slide shows the number of tornadoes that occurred in January 1999.

Slide 14. Although tornadoes are devastating and can produce winds over 200 mph, not all tornadoes reach this strength. Some tornadoes are weak, producing winds of only 50 mph.

Slide 15. Dr. Theodore Fujita, meteorology professor from the University of Chicago, developed the widely used tornado classification scheme.

Slide 16. This graph shows that more deaths occur with the strongest tornadoes, F4 or greater, even though F4 or greater tornadoes comprise the lowest number of total tornadoes.

Slide 17. A Tornado or Severe Thunderstorm watch means that conditions are favorable for tornadoes or severe thunderstorms. It does not mean that these weather events are occurring.

Slide 18. A Tornado or Severe Thunderstorm warning means that a tornado or severe thunderstorm has been detected on Doppler radar or has been spotted by an observer. Take action now.

Slide 19. Plan a shelter.

Slides 20-22. Mobile homes and automobiles are inadequate shelter from tornadoes.

Slide 23-28. These slides address common tornado myths. The misconception that sheltering in an overpass is safe led to some people losing their lives during the May 3, 1999 tornado outbreak in Oklahoma City.

Slide 29-30. This map shows where the best locations are in your home to shelter from a severe storm.

Slide 31. In a church, business or school the best location to find shelter is in a hall away from glass.

Slide 32. Avoid large rooms such as, gymnasiums, the church sanctuary, or the school swimming pool.

Slide 33. Evacuate portable school rooms. They are like mobile homes and do not supply adequate shelter.

Slide 34. Plan ahead to survive.

Slide 35. This slide asked which severe weather element causes the most damage as well as loss of life in the United States. The answer is flooding.

Slide 36. Floods are called the master of surprise due to how rapid water can rise and how complacent people take their occurrence.

Slide 37. Floods kill near twice as many people each year than tornadoes.

Slide 38. The Economic damage due to floods is incredible.

Slide 39-41. The Fort Collins, Colorado flash flood of July 1997 is an example of a typical killer flash flood. We have had similar situations in the Mid-South, most recently in November 2001.

Slide 42-43. Flash Flood safety rules.

Slide 44-49. Lightning kills more each year than tornadoes.

Slide 49. The National Weather Service has a specific definition of a severe thunderstorm. It is based on hail size and wind speed. The amount and intensity of lightning is not included in this definition.

Slide 50. Downbursts are relatively common, more so than tornadoes. Downbursts cause more damage each year than tornadoes. Downbursts are caused by cold air, descending quickly to the ground. Downbursts can produce winds that are equivalent to those produced by a moderate sized tornado.

Slide 51. Examples of downbursts by looking at clouds.

Slide 52. A sequence of photos depicting a downburst in action.

Slide 53. Squall lines cause more widespread damage than any other type of thunderstorm complex.

Slide 54. This is a Doppler Radar sequence shows a squall line approaching a community. Note the sharp reflectivity gradient from the strong red color to no radar echo. The “bowing” of the radar echo indicates a strong potential for damaging wind.

Slide 55. Wind damage resulting from downbursts or squall lines can be devastating and are often

mistaken for tornado damage.

Slides 56-57. Hail safety rules.

Slide 58. How does one receive notification of severe weather warnings? NOAA Weather Radio, commercial television and radio, as well as the internet are excellent resources.

Slide 59. The internet provides continuous weather updates.

Slide 60. The Emergency Alert System or EAS is the Nation's warning system for severe weather, civil emergencies and enemy attack. NOAA Weather Radio provides the backbone for EAS with its tone alert capability.

Slides 61-62. A description of NOAA Weather Radio.

Slide 63. The contents of the disaster kit.

Slide 64. These are the most common severe weather elements in the Mid-South.

Slide 65. You must plan ahead.

Slide 66. End.